

OLIVA  
Serial No. 09/688,170

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**AMENDMENTS TO THE CLAIMS:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (CANCELLED)
2. (CANCELLED)
3. (CANCELLED)
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- 24. (CANCELLED)
- 25. (CANCELLED)
- 26. (CANCELLED)
- 27. (CANCELLED)
- 28. (CANCELLED)
- 29. (CANCELLED)
- 30. (CANCELLED)
- 31. (CANCELLED)
- 32. (CANCELLED)

33. (Previously Presented) An aiming device for aiming and visually indicating a reading area of a coded information reader, comprising:

means for emitting a light beam;

means for deflecting at least one first portion of the light beam so as to generate at least two different beam portions active on at least two different zones of a reading area of a coded information reader along at least two different optical paths;

wherein the means for deflecting at least one portion of the light beam consists of a refractive optical element;

wherein the refractive optical element comprises first and second opposed faces for respectively collecting the light beam and projecting the at least two beam portions on the reading area, wherein an optical axis Z is defined into the refractive optical element;

wherein said second face comprises four first surface portions, each of the four first surface portions being inclined by a predetermined angle with respect to the first face and adapted to deflect a corresponding portion of the light beam by a predetermined deflection angle with respect to the optical axis Z, so as to define, in the refractive optical element, a poly-prismatic structure having a substantially pyramidal shape with a rhomboidal base.

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34. (Previously Presented) An aiming device for aiming and visually indicating a reading area of a coded information reader, comprising:

means for emitting a light beam;

means for deflecting at least one first portion of the light beam so as to generate at least two different beam portions active on at least two different zones of a reading area of a coded information reader along at least two different optical paths;

wherein the means for deflecting at least one portion of the light beam consists of a refractive optical element;

wherein the refractive optical element comprises first and second opposed faces for respectively collecting the light beam and projecting the at least two beam portions on the reading area, wherein an optical axis Z is defined into the refractive optical element;

wherein the second face comprises at least one first peripheral surface portion inclined by a predetermined angle  $\alpha_1$  with respect to the first face and adapted to deflect the at least one first portion of light beam by a predetermined deflection angle  $\beta_1$  with respect to the optical axis Z, and at least one second surface portion proximate a center of the second face, the at least one second surface portion being inclined by a predetermined angle  $\alpha_2$  different from  $\alpha_1$ , with respect to the first face and adapted to deflect the at least one portion of light beam by a predetermined deflection angle  $\beta_2$ , different from  $\beta_1$ , with respect to the optical axis Z.

35. (Previously Presented) An aiming device for aiming and visually indicating a reading area of an optical apparatus, the aiming device comprising:

an emitter which emits a light beam;

an optical element which splits the light beam into at least two different beam portions active on at least two different zones of the reading area of the optical apparatus along at least two different optical paths, wherein the optical element consists of a refractive optical element;

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wherein the refractive optical element comprises first and second opposed faces for respectively collecting the light beam and projecting the at least two beam portions on the reading area, wherein an optical axis Z is defined into the refractive optical element and the second face comprises at least one first surface portion inclined by a predetermined angle  $\alpha$  with respect to the first face and adapted to deflect the at least one first portion of light beam by a predetermined deflection angle  $\beta$  with respect to the optical axis Z;

wherein said second face comprises four first surface portions, each of the four first surface portions being inclined by a predetermined angle with respect to the first face and adapted to deflect a corresponding portion of the light beam by a predetermined deflection angle with respect to the optical axis Z, so as to define, in the refractive optical element, a poly-prismatic structure having a substantially pyramidal shape with a rhomboidal base.

36. (Previously Presented) An aiming device for aiming and visually indicating a reading area of an optical apparatus, the aiming device comprising:

an emitter which emits a light beam;

an optical element which splits the light beam into at least two different beam portions active on at least two different zones of the reading area of the optical apparatus along at least two different optical paths, wherein the optical element consists of a refractive optical element;

wherein the refractive optical element comprises first and second opposed faces for respectively collecting the light beam and projecting the at least two beam portions on the reading area, wherein an optical axis Z is defined into the refractive optical element and the second face comprises at least one first surface portion inclined by a predetermined angle  $\alpha$  with respect to the first face and adapted to deflect the at least one

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first portion of light beam by a predetermined deflection angle  $\beta$  with respect to the optical axis Z;

wherein the second face comprises at least one first peripheral surface portion inclined by a predetermined angle  $\alpha_1$  with respect to the first face and adapted to deflect the at least one first portion of light beam by a predetermined deflection angle  $\beta_1$  with respect to the optical axis Z, and at least one second surface portion proximate a center of the second face, the at least one second surface portion being inclined by a predetermined angle  $\alpha_2$  different from  $\alpha_1$ , with respect to the first face and adapted to deflect the at least one portion of light beam by a predetermined deflection angle  $\beta_2$ , different from  $\beta_1$ , with respect to the optical axis Z.

37. (New) A device according to claim 33, further comprising means for collimating the light beam.

38. (New) A device according to claim 33, wherein said means for emitting a light beam comprises a LED emitting a light beam.

39. (New) A device according to claim 33, wherein the refractive optical element comprises means for transmitting without any deflection a second portion of the light beam towards the reading area.

40. (New) A device according to claim 39, wherein the means for transmitting without any deflection the second portion of the light beam towards the reading area is provided centrally in the refractive optical element.

41. (New) A device according to claim 33, wherein the refractive optical element comprises means for transmitting without any deflection a second portion of the light

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beam towards the reading area, and wherein the second face comprises at least one second surface portion which is substantially flat and parallel to the first face for collecting the light beam, the at least one second surface portion forming the means for transmitting without any deflection the at least one second portion of light beam towards the reading area.

42. (New) A device according to claim 33, wherein the refractive optical element comprises means for transmitting without any deflection a second portion of the light beam towards the reading area, and wherein said refractive optical element comprises a through hole extended between the first and second faces and coaxially formed with respect to the optical axis Z, the through hole forming the means for transmitting without any deflection the at least one second portion of light beam towards the reading area.

43. (New) A device according to claim 33, wherein the refractive optical element has a cross section smaller than that of the light beam.

44. (New) A device according to claim 33, further comprising means for collimating the light beam, wherein the collimation means comprises a collimation lens fixedly associated with the refractive optical element at the first face for collecting the light beam.

45. (New) A device according to claim 33, further comprising an amplitude mask adapted to impart a predetermined profile to the at least two different beam portions.

46. (New) A device according to claim 45, further comprising means for collimating the light beam wherein the amplitude mask is arranged between the collimation means and the refractive optical element.

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47. (New) A device according to claim 33, wherein at least one of said inclined surface portions of the refractive optical element is substantially planar.

48. (New) A device according to claim 33, wherein at least one of said inclined surface portions of the refractive optical element is substantially cylindrical and convex.

49. (New) A device according to claim 48, comprising at least one diverging lens arranged upstream of the refractive optical element in correspondence to said at least one of said inclined surface portion.

50. (New) An optical element for aiming and visually indicating a reading area of a coded information reader, comprising means for splitting light beam into at least two beam portions adapted to be projected on at least two different zones of a reading area along at least two different optical paths, wherein the optical element is a refractive optical element comprising at least two different surface portions which simultaneously collect the emitted light beam and which simultaneously project said at least two different beam portions onto said at least two different zones of the reading area;

wherein the refractive optical element comprises first and second opposed faces for respectively collecting the light beam and projecting the at least two beam portions on the reading area, wherein an optical axis Z is defined into the refractive optical element;

wherein said second face comprises four first surface portions, each of the four first surface portions being inclined by a predetermined angle with respect to the first face and adapted to deflect a corresponding portion of the light beam by a predetermined deflection angle with respect to the optical axis Z, so as to define, in the refractive optical element, a poly-prismatic structure having a substantially pyramidal shape with a rhomboidal base.

51. (New) An optical apparatus for reading information in a reading area, the optical

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apparatus comprising an aiming device, the aiming device having:

an emitter which emits a light beam;

a refractive optical element which splits the light beam into at least two different beam portions active on at least two different zones of a reading area of the optical apparatus along at least two different optical paths, wherein the refractive optical element comprises at least two different surface portions which simultaneously collect the emitted light beam and which simultaneously project said at least two different beam portions onto said at least two different zones of the reading area;

wherein the refractive optical element comprises first and second opposed faces for respectively collecting the light beam and projecting the at least two beam portions on the reading area, wherein an optical axis Z is defined into the refractive optical element;

wherein said second face comprises four first surface portions, each of the four first surface portions being inclined by a predetermined angle with respect to the first face and adapted to deflect a corresponding portion of the light beam by a predetermined deflection angle with respect to the optical axis Z, so as to define, in the refractive optical element, a poly-prismatic structure having a substantially pyramidal shape with a rhomboidal base.

52. (New) An optical apparatus according to claim 50, wherein the refractive optical element comprises means for transmitting without any deflection a portion of the light beam towards the reading area.

53. (New) A device according to claim 35, wherein the refractive optical element also comprises means for transmitting without any deflection a second portion of the light beam towards the reading area.



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54. (New) A device according to claim 35, wherein the means for transmitting without any deflection the second portion of the light beam towards the reading area is provided centrally in the refractive optical element.

55. (New) A device according to claim 35, wherein the refractive optical element has a cross section smaller than that of the light beam.

56. (New) A device according to claim 35, wherein the second face comprises at least one first peripheral surface portion inclined by a predetermined angle  $\alpha_1$  with respect to the first face and adapted to deflect the at least one first portion of light beam by a predetermined deflection angle  $\beta_1$  with respect to the optical axis Z, and at least one second surface portion proximate a center of the second face, the at least one second surface portion being inclined by a predetermined angle  $\alpha_2$  different from  $\alpha_1$ , with respect to the first face and adapted to deflect the at least one portion of light beam by a predetermined deflection angle  $\beta_2$ , different from  $\beta_1$ , with respect to the optical axis Z.

57. (New) A device according to claim 35, further comprising an amplitude mask adapted to impart a predetermined profile to the at least two different beam portions.

58. (New) A device according to claim 35, wherein the at least one first inclined surface portion of the refractive optical element is substantially planar.

59. (New) A device according to claim 35, wherein the at least one first inclined surface portion of the refractive optical element is substantially cylindrical and convex.

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60. (New) A device according to claim 59, comprising at least one diverging lens arranged upstream of the refractive optical element in correspondence to the at least one first inclined surface portion.